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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,993	09/29/2003	Takayuki Takahashi	03-616	2825

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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT PAPER NUMBER

1725

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action
Before the Filing of an Appeal Brief**

Application No.

10/673,993

Applicant(s)

TAKAHASHI ET AL.

Examiner

Lynne Edmondson

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--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 09 November 2005 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
(b) ☐ They raise the issue of new matter (see NOTE below);
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
The status of the claim(s) is (or will be) as follows:
Claim(s) allowed: 1-3 and 5.
Claim(s) objected to: _____.
Claim(s) rejected: 6-10.
Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See Continuation Sheet.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). _____.
13. ☐ Other: _____.

Lynne Edmondson
Primary Examiner
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Continuation of 11. does NOT place the application in condition for allowance because: 3. Regarding applicant's argument that Ning processes at a higher temperature, therefore forming nitrides in the bond, it is noted that the reference teaches alumina substrates or AlN substrates. There is no method or indication of changing the alumina to alumina by processing in nitrogen. N₂ in the reference is presumably present in low amounts a its only purpose is to prevent oxidation. Nitride formation requires higher temperatures (typically over 1000 C) and high concentrations of N₂ or the addition of high pressures and/or extreme conditions. Good strength is shown at 700 C in Table 1 of the reference. It is further noted that the process can be performed in vacuum as an alternative to nitrogen. See Iwata et al. (JPN 2005-8432 A, nitride formation over 1200 C, high N₂, figures 1 and 3), Hunter (USPN 6066205, high N₂, temperature over 1000 C) and Hexemer, Jr. et al. (US 4929433, nitride formation @ 1600 C for 3 hours)..

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ning et al. (USPN 6183875 B1, IDS).

Ning teaches a substrate comprising high purity (at least 99.9%) aluminum (col 13 line 20) bonded to an alumina or aluminum nitride substrate (col 6 lines 52-62) to form a power module (col 1 lines 20-27). The substrate is formed by direct bonding, which is performed in an inert atmosphere at temperatures between 590 and 640 C (Table 1, col 3 lines 54-67 and col 16 lines 31-57). The inert gas is nitrogen (Table 1). The bonded substrate has a peel strength of at least 20 kg/cm (~196 N/cm) (col 12 lines 55-64 and col 19 lines 1-16). See also Ning claims 1-3, 6, 9, 10, 13, 15 and 19.

Response to Arguments

3. Regarding applicant's argument that Ning processes at a higher temperature, therefore forming nitrides in the bond, it is noted that the reference teaches alumina substrates or AlN substrates. There is no method or indication of changing the alumina to alumina by processing in nitrogen. N₂ in the reference is presumably present in low

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amounts as the only purpose is to prevent oxidation. Nitride formation requires higher temperatures (typically over 1000 C) and high concentrations of N₂ or the addition of high pressures and/or extreme conditions. Good strength is shown at 700 C in Table 1 of the reference. It is further noted that the process can be performed in vacuum as an alternative to nitrogen. See Iwata et al. (JPN 2005-8432 A, nitride formation over 1200 C, high N₂, figures 1 and 3), Hunter (USPN 6066205, high N₂, temperature over 1000 C) and Hexemer, Jr. et al. (US 4929433, nitride formation @ 1600 C for 3 hours).

4. Therefore the 102 rejection of claims 6-10 as anticipated by Ning stands.

Allowable Subject Matter

5. Claims 1-3 and 5 are allowed.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Utumi et al. (USPN 5571603, extreme conditions @ 400C, more conventional process over 1000C).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (571)

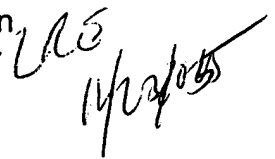
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272-1172. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lynne Edmondson
Primary Examiner
Art Unit 1725

Handwritten signature of Lynne Edmondson, dated 1/22/05.

LRE